



# **Canola Stand Establishment in 2011**

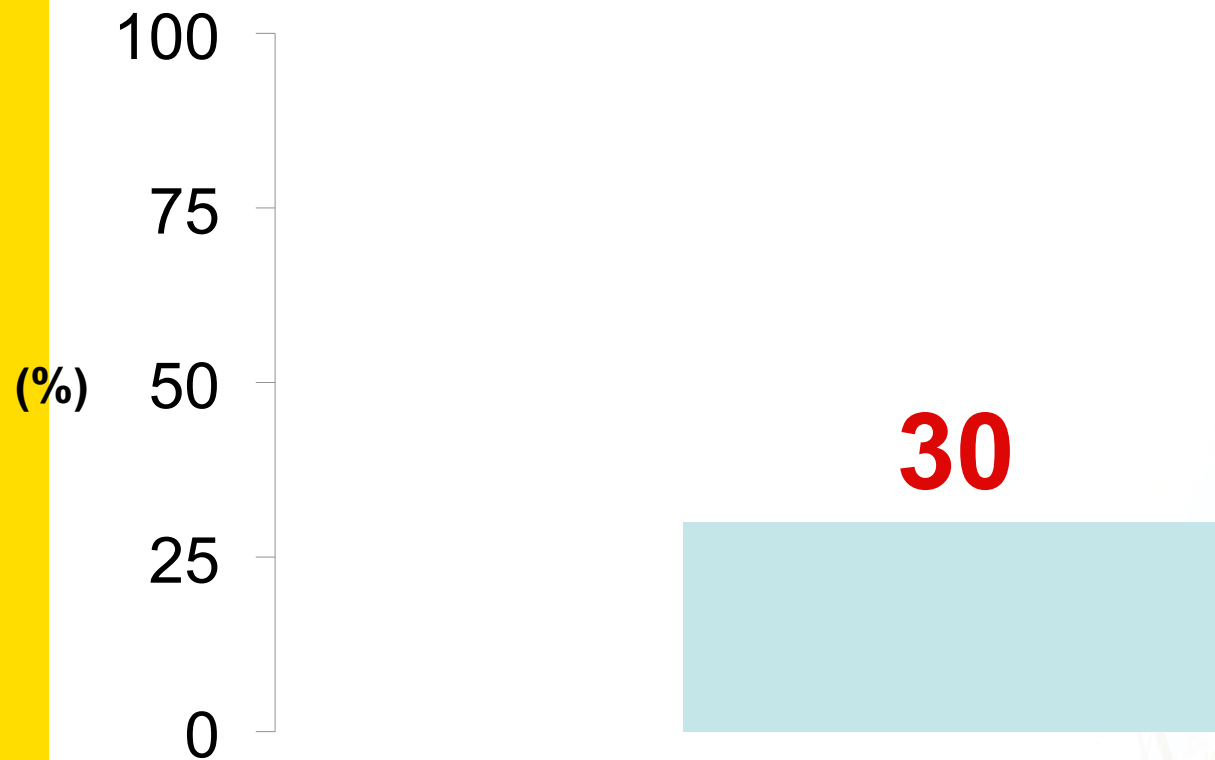
**By Clinton Jurke  
Canola Council of Canada**

**Crop Establishment Workshop  
Soils & Crops 2011  
Saskatoon 16-March-2011**



# Average % Hybrid Canola Emergence

☉ - 8 Site-years, 40 Treatments



Harker et al. 2011. Unpublished data.



# Keys to Being Profitable

- Risk Management
- Target 10 plants/sqf
- Ensure precision in seed placement
- Target 1/2" to 3/4" seeding depth
- Watch your speed
- Pay attention to your soil temperature
- Use good quality seed





# Outline

- The Risks
- The Target
- The Factors







# The Risks





# Risk – Bad weather





# Risk – Diseases





# Risk – Insects





# Risk – Insects





# Risk – Uneven crop





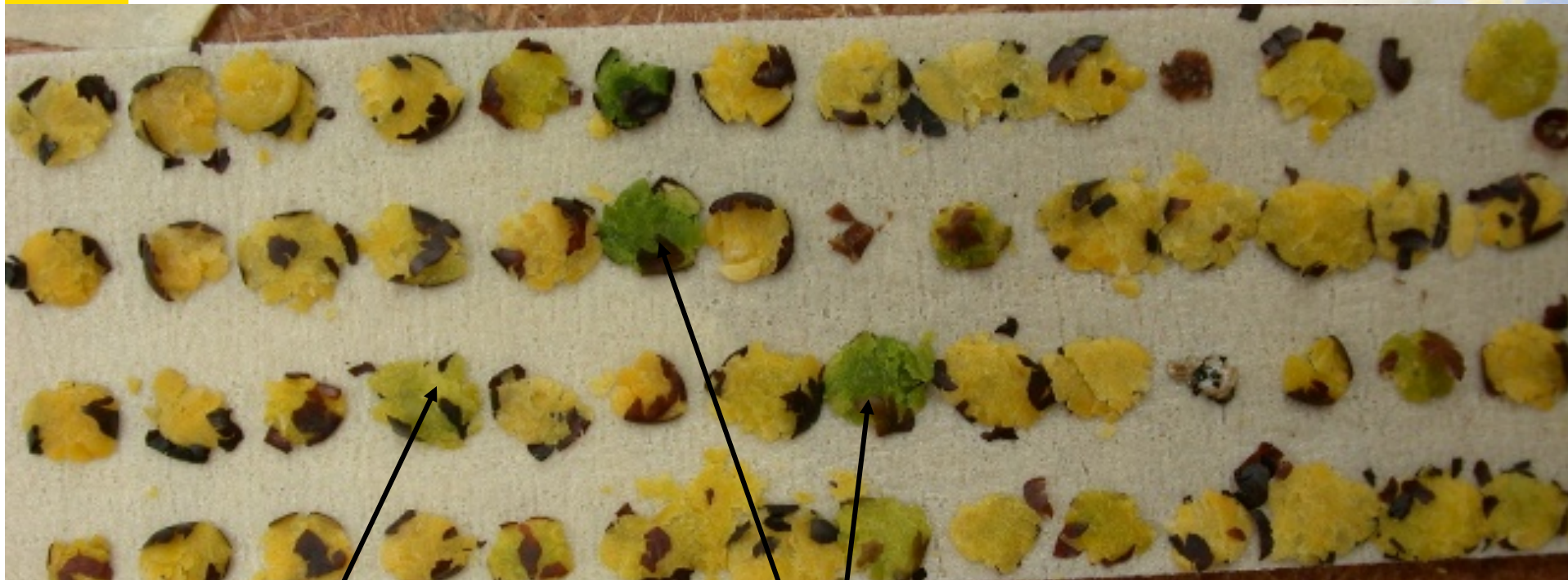
# Risk – Uneven crop



**Fall Frost** (Aug. 19<sup>th</sup>, 2004)



# Risk – Uneven crop



Not DGR

Distinctly green seeds  
(DGR)

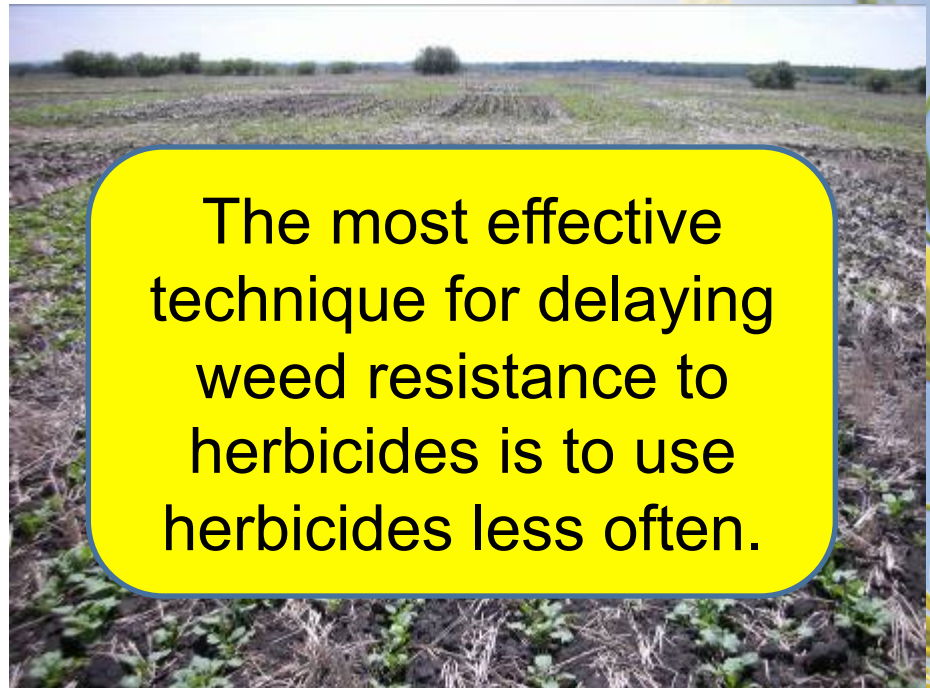


# Risk – Weed Resistance



Hybrid  
4 mph  
1 cm

Hybrid  
4 mph  
4 cm



June 7 (April seeded)

Photos courtesy of N. Harker



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**Farmers Cope With Roundup-Resistant Weeds**



Christopher Sarvey for The New York Times

Jason Hamlin, a certified crop adviser and agronomist, looks for weeds resistant to glyphosate in Dyersburg, Tenn.

By WILLIAM NEUMAN and ANDREW POLLACK  
Published: May 3, 2010

DYERSBURG, Tenn. — For 15 years, Eddie Anderson, a farmer, has been a strict adherent of no-till agriculture, an environmentally friendly technique that all but eliminates plowing to curb erosion and the harmful runoff of fertilizers and pesticides.

But not this year.

On a recent afternoon here, Mr. Anderson watched as tractors crisscrossed a rolling field — plowing and mixing herbicides into the soil to

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<http://www.nytimes.com/2010/05/04/business/energy-environment/04weed.html>

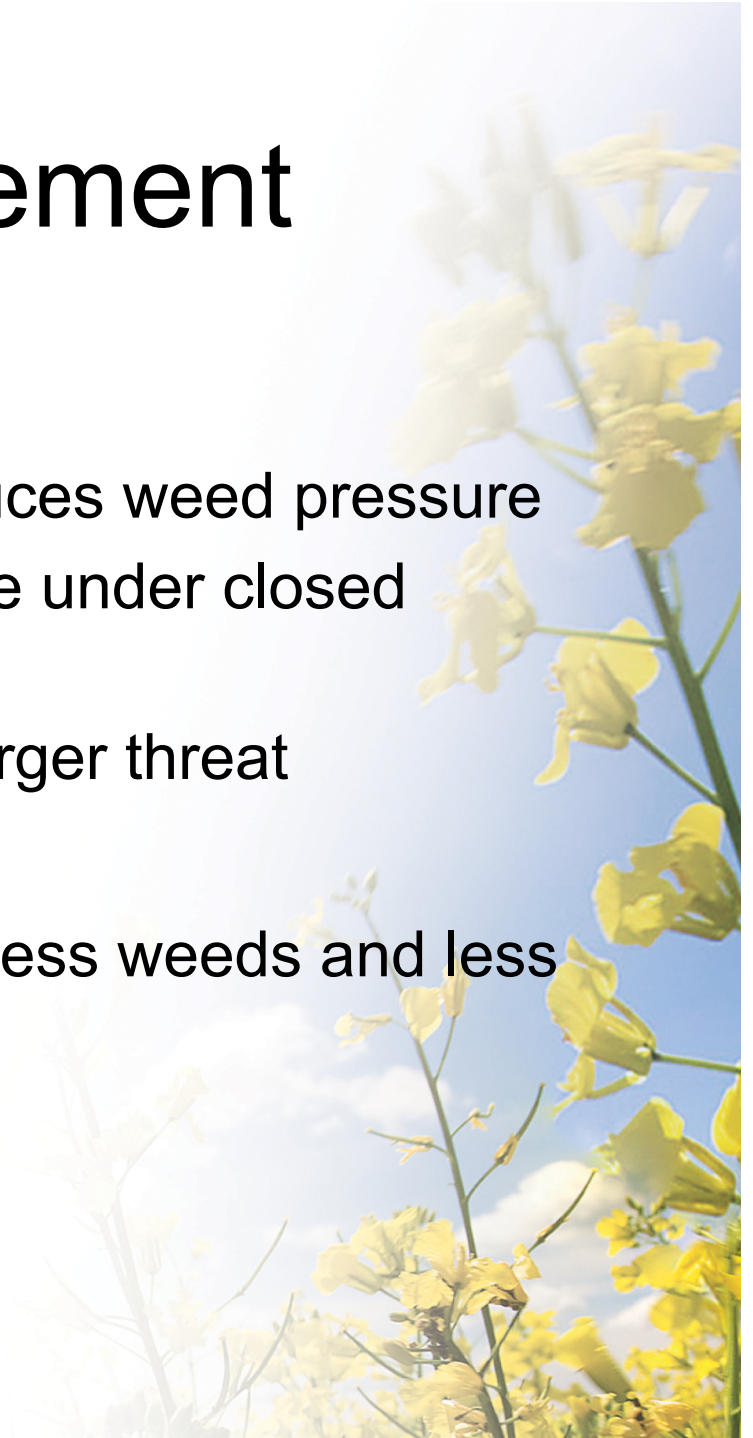
## Farmers Cope With Roundup-Resistant Weeds





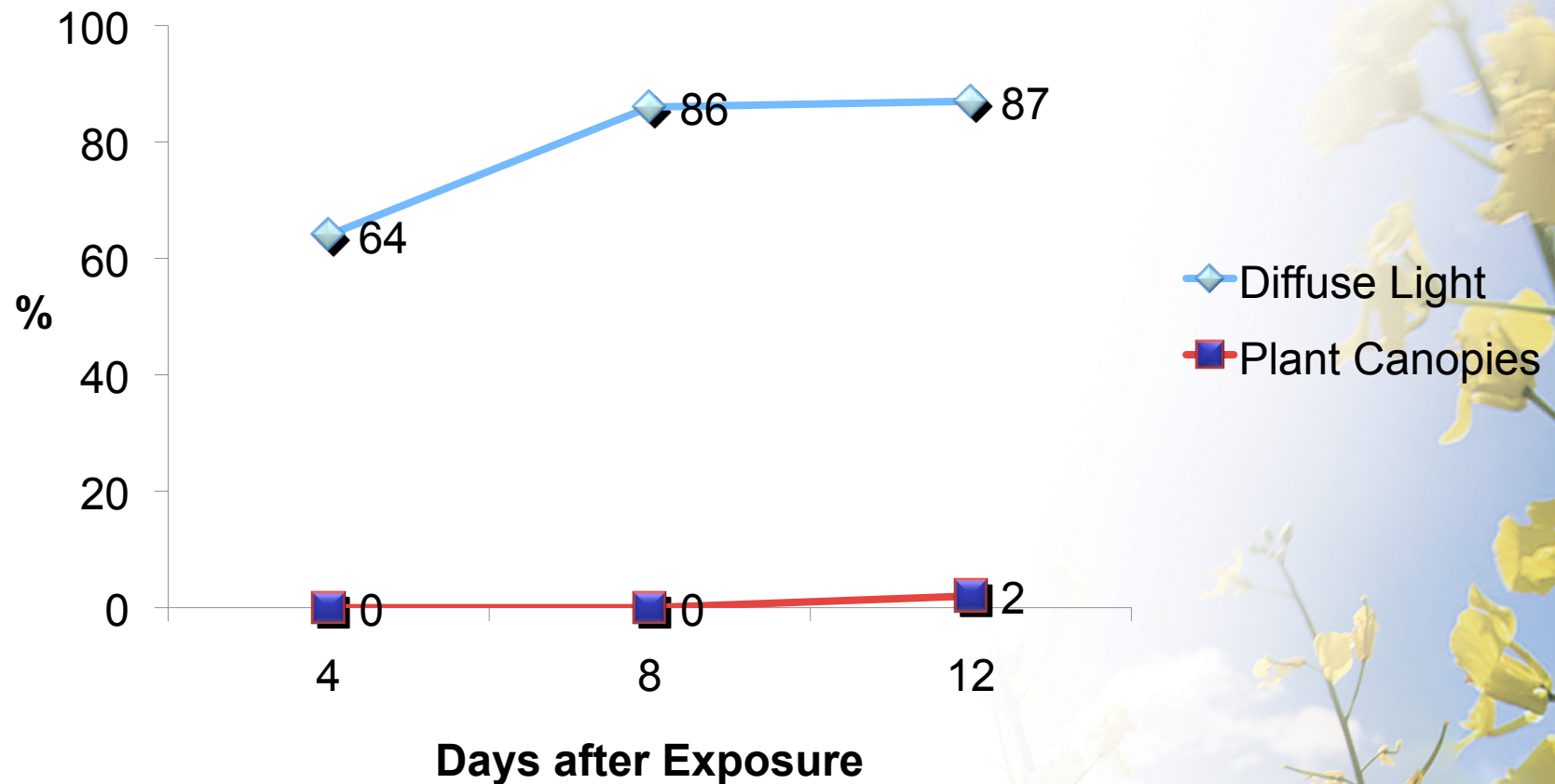
# Weed Management

- Knowns
  - Competitive crop canopy reduces weed pressure
  - Some weeds do not germinate under closed canopies
  - Weed resistance becoming larger threat
- Solutions
  - Better stand establishment = less weeds and less selection pressure
  - Rotate herbicides





# Dandelion Germination - with 2 light sources



T. Górski. 1975. Germination of seeds in the shadow of plants. *Physiol. Plant* 34:342-346  
- rhubarb, rye, barley, dense currant, and wild shrubs canopies

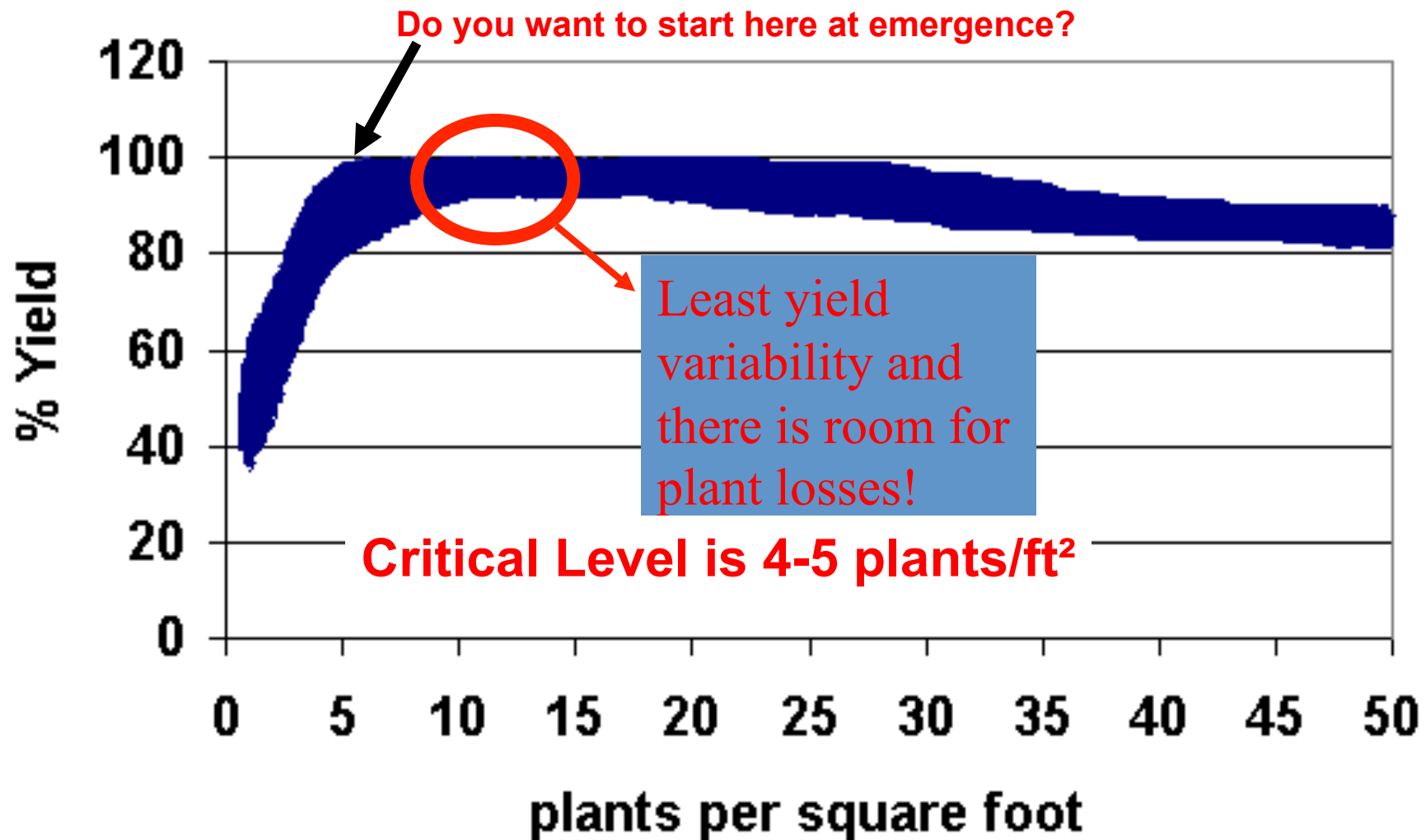




# The Target



# General Response of Canola Yield to Plant Population

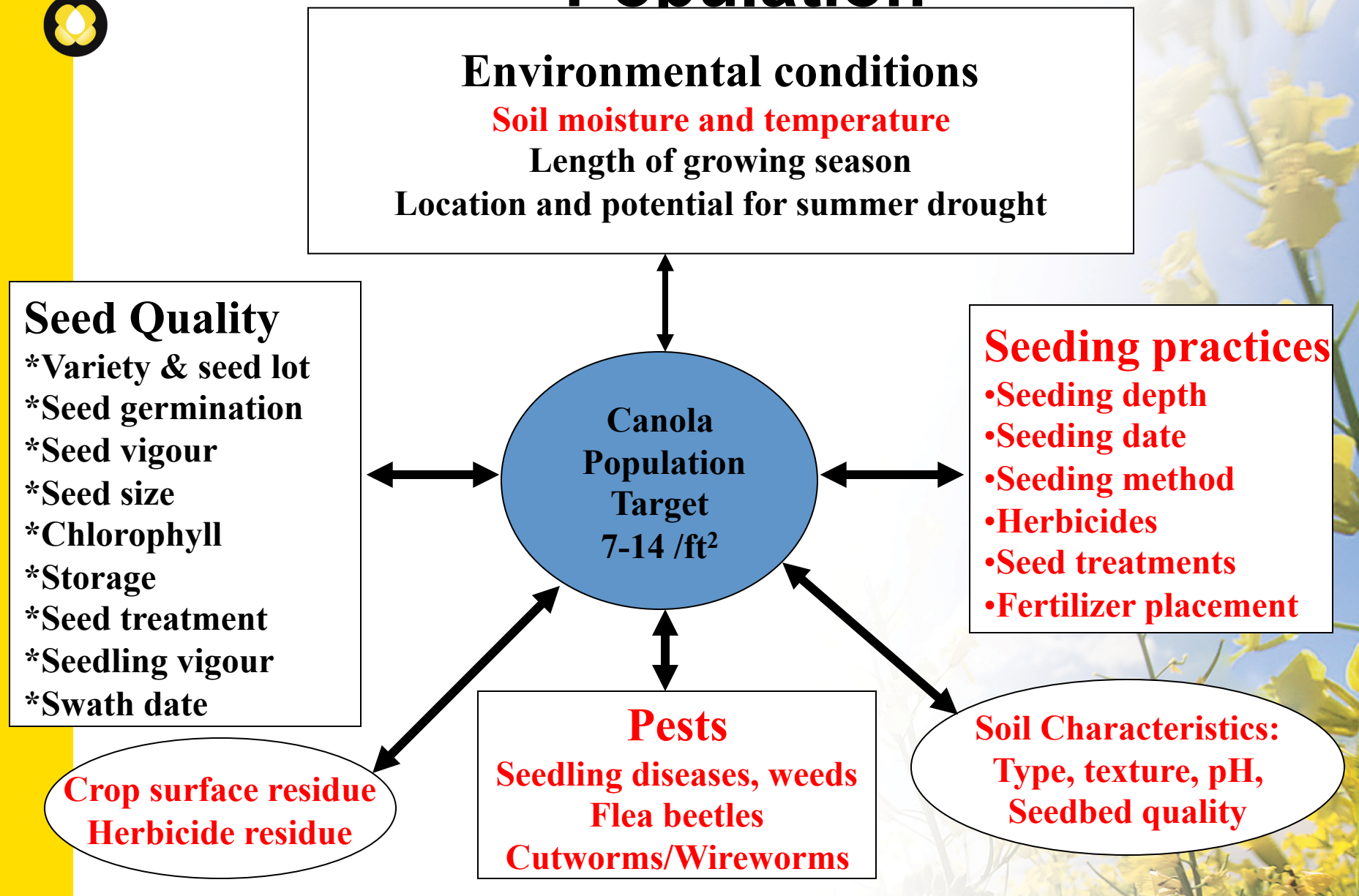




# The Factors



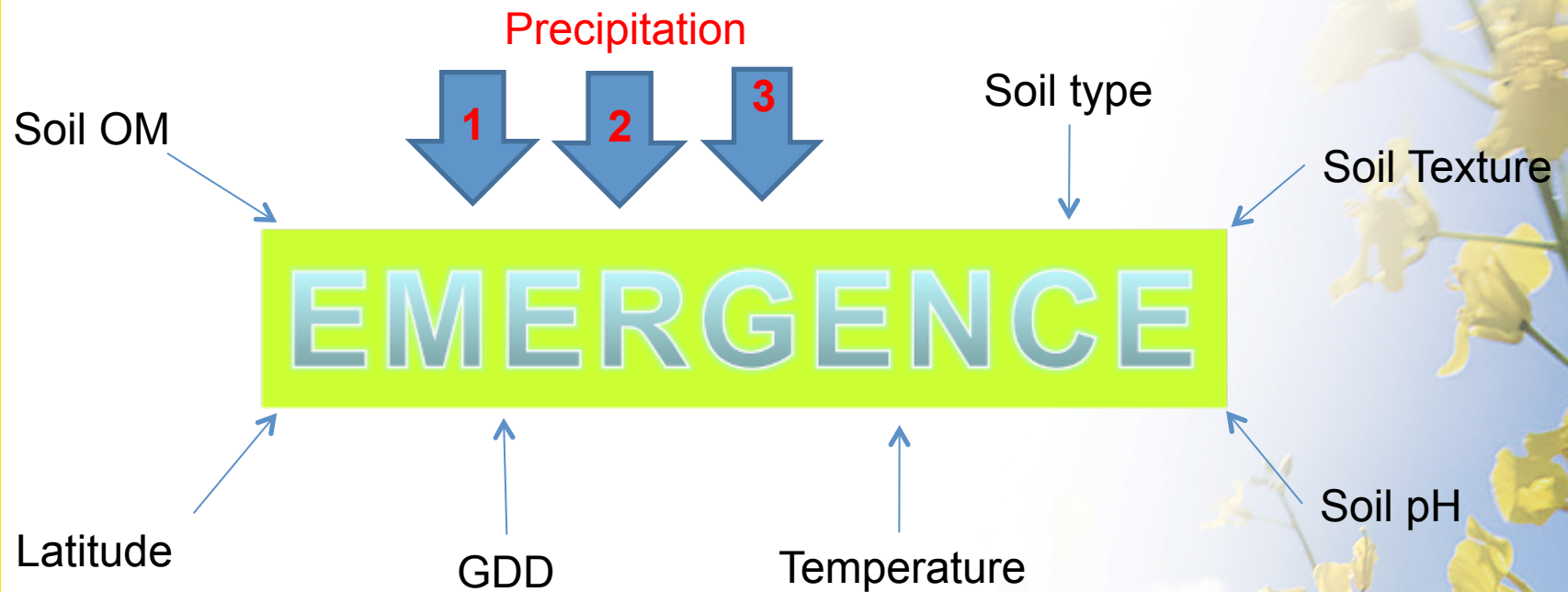
# Factors Affecting Plant Population







# Neural Net Prediction of Canola Emergence



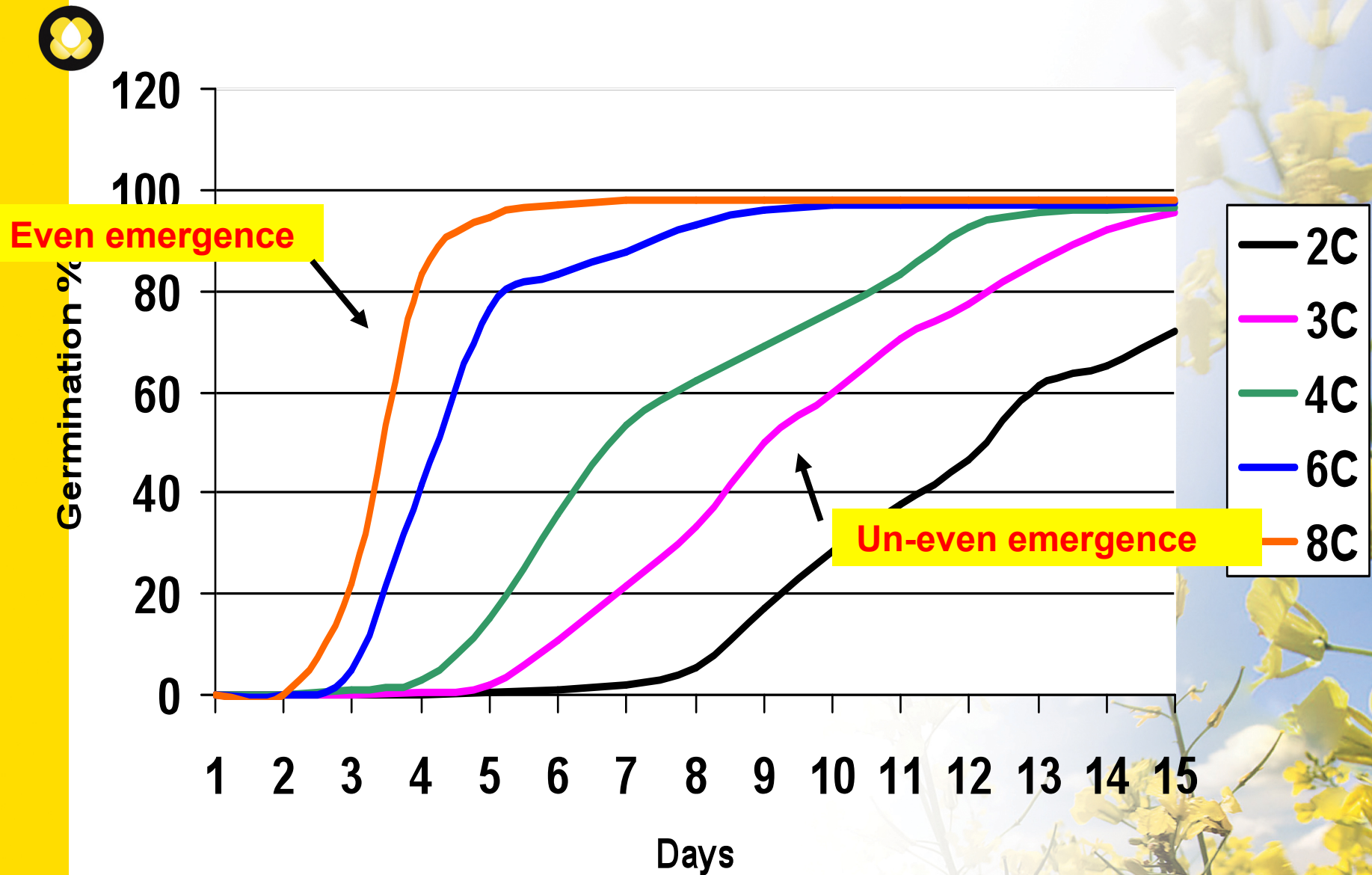
Bernie Hill – AAFC, Lethbridge



# Effect soil type and moisture content on *B. napus* emergence

Soil type	6 days		13 days	
	50% FC	100% FC	50% FC	100% FC
Loam/Sandy Clay	0	94	59	93
Clay loam/Sandy Clay	77	75	88	91
Grey Wooded/Clay	0	74	5	90
Sand/Sandy Loam	0	30	0	70

# Effect of Soil Temperature on emergence





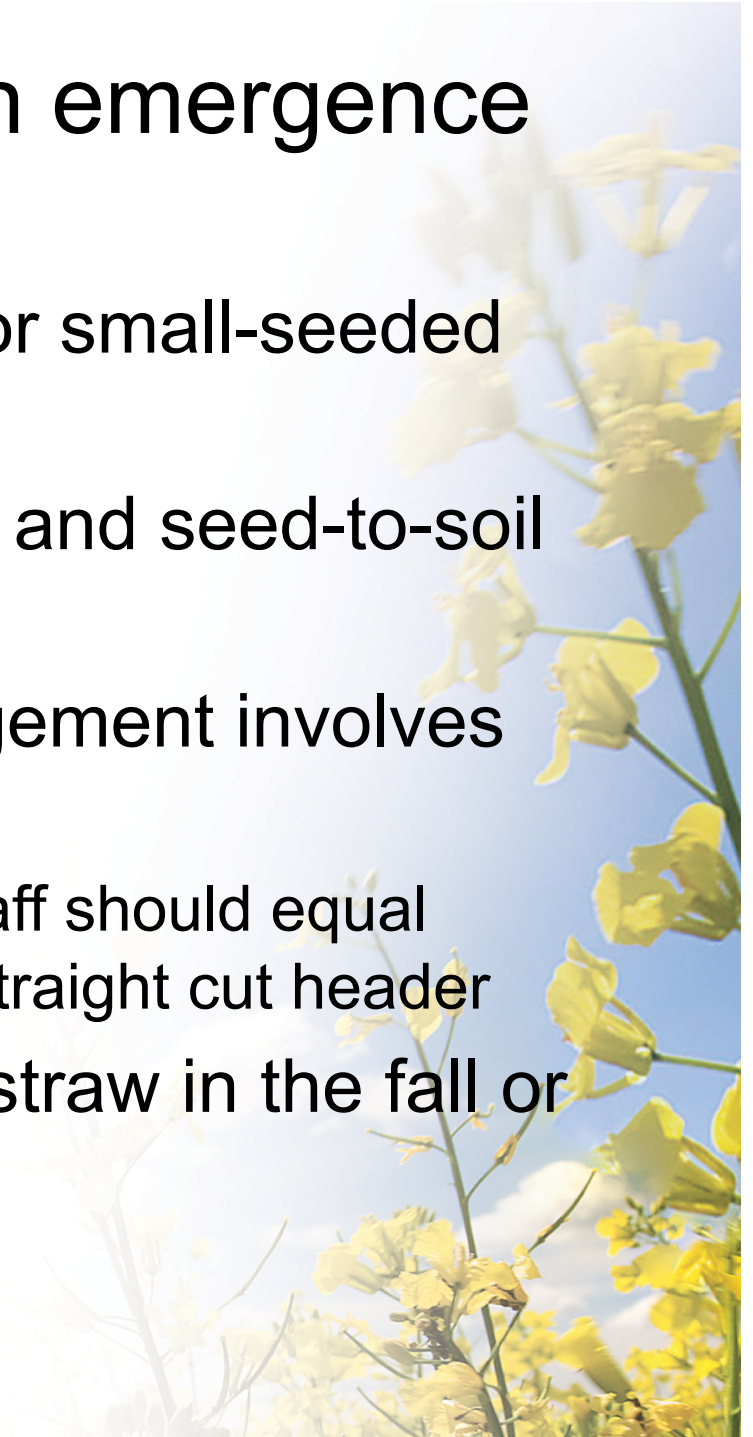
# Effect of soil crusting on emergence



# Effect of crop residue on emergence



- Straw/chaff are an issue for small-seeded crops
- Has an effect on soil temp and seed-to-soil contact
- Successful residue management involves starting the previous fall
  - Spread width of straw & chaff should equal width of cut by swather or straight cut header
- Heavy harrows to spread straw in the fall or early spring can be useful
  - but watch aggressiveness





# Effect of crop residue on emergence

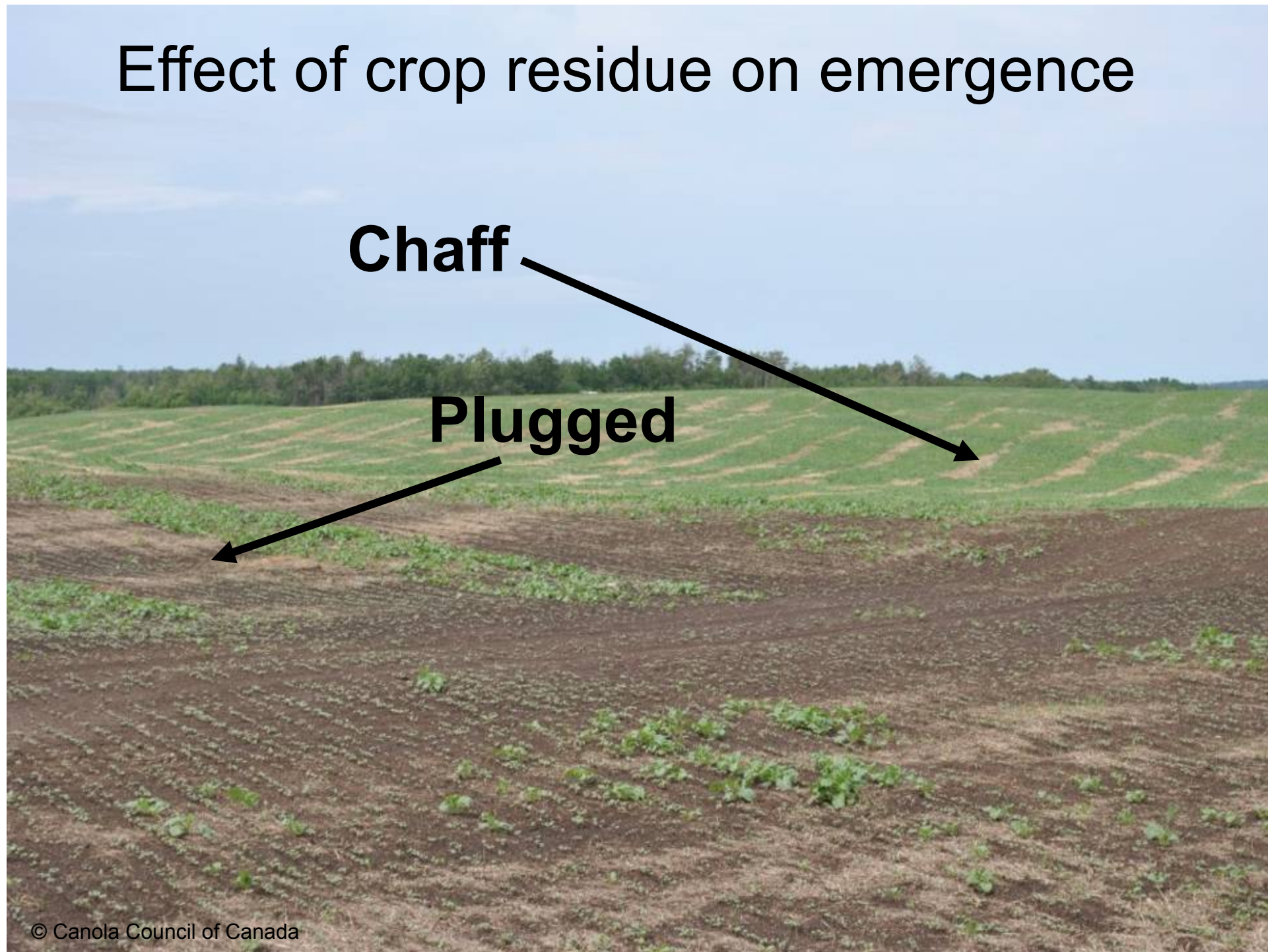




# Effect of crop residue on emergence

**Chaff**

**Plugged**



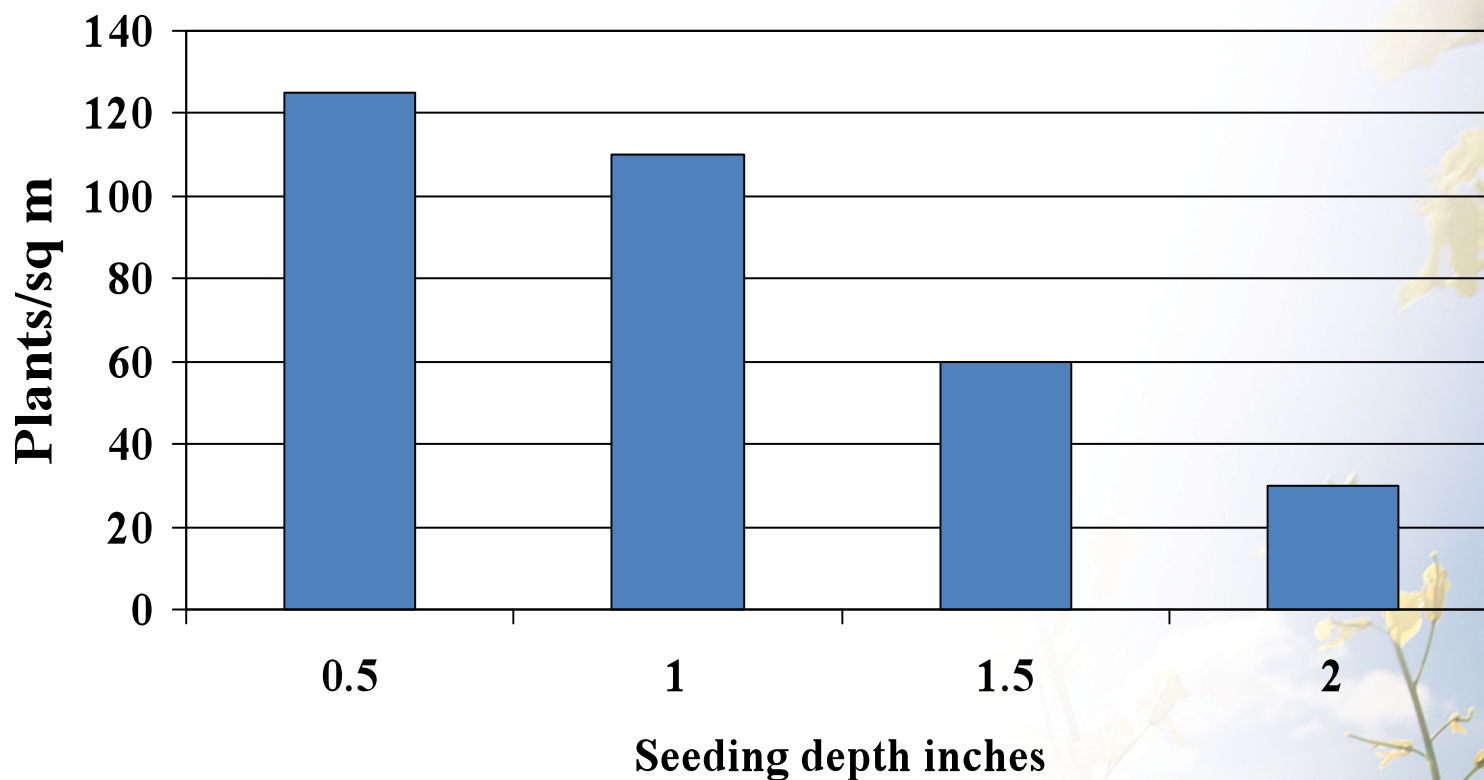






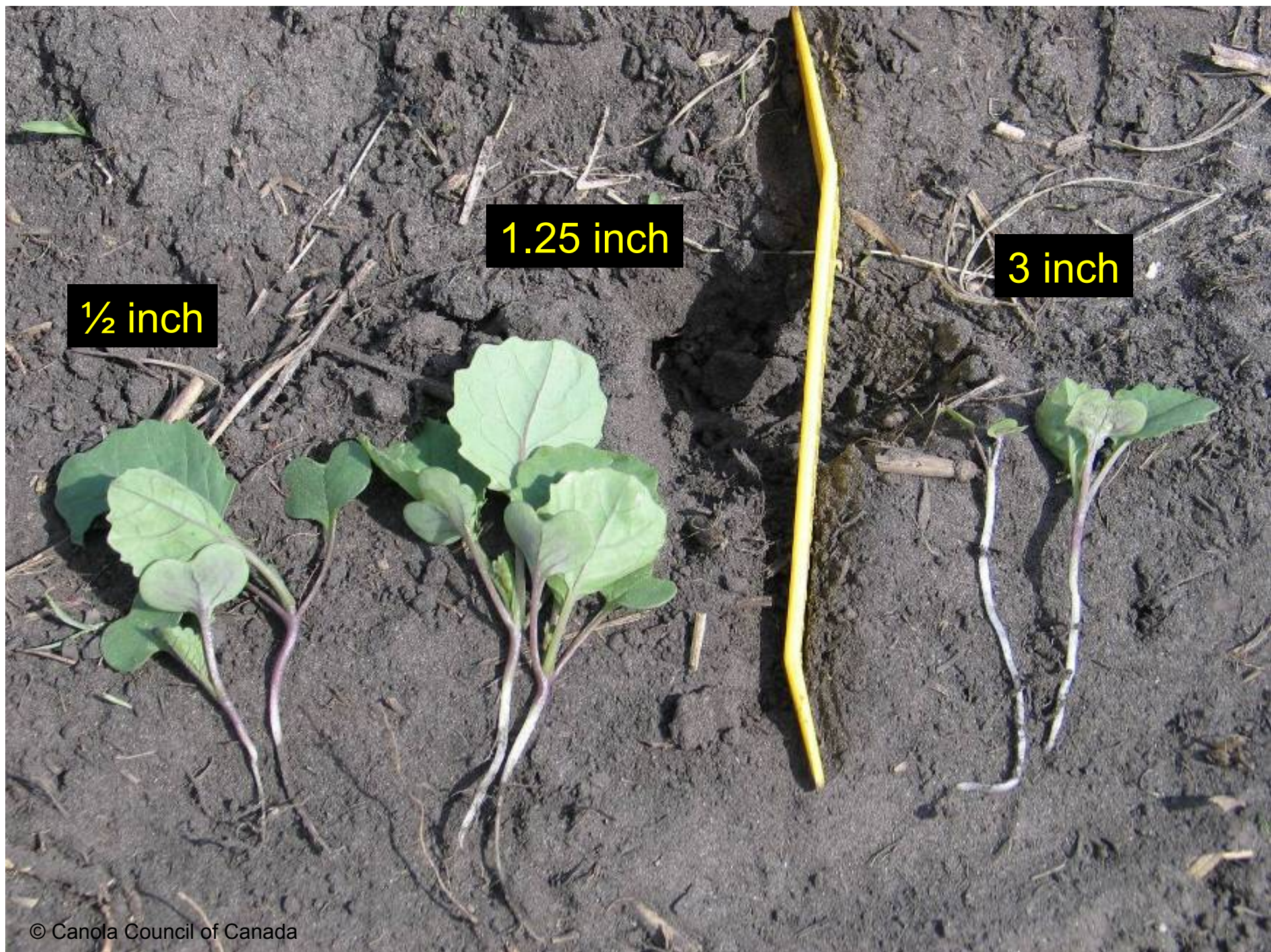


# Effect of Seeding Depth on Canola Emergence



Summary of Canola Council's Canola Production Centre Data, 2003









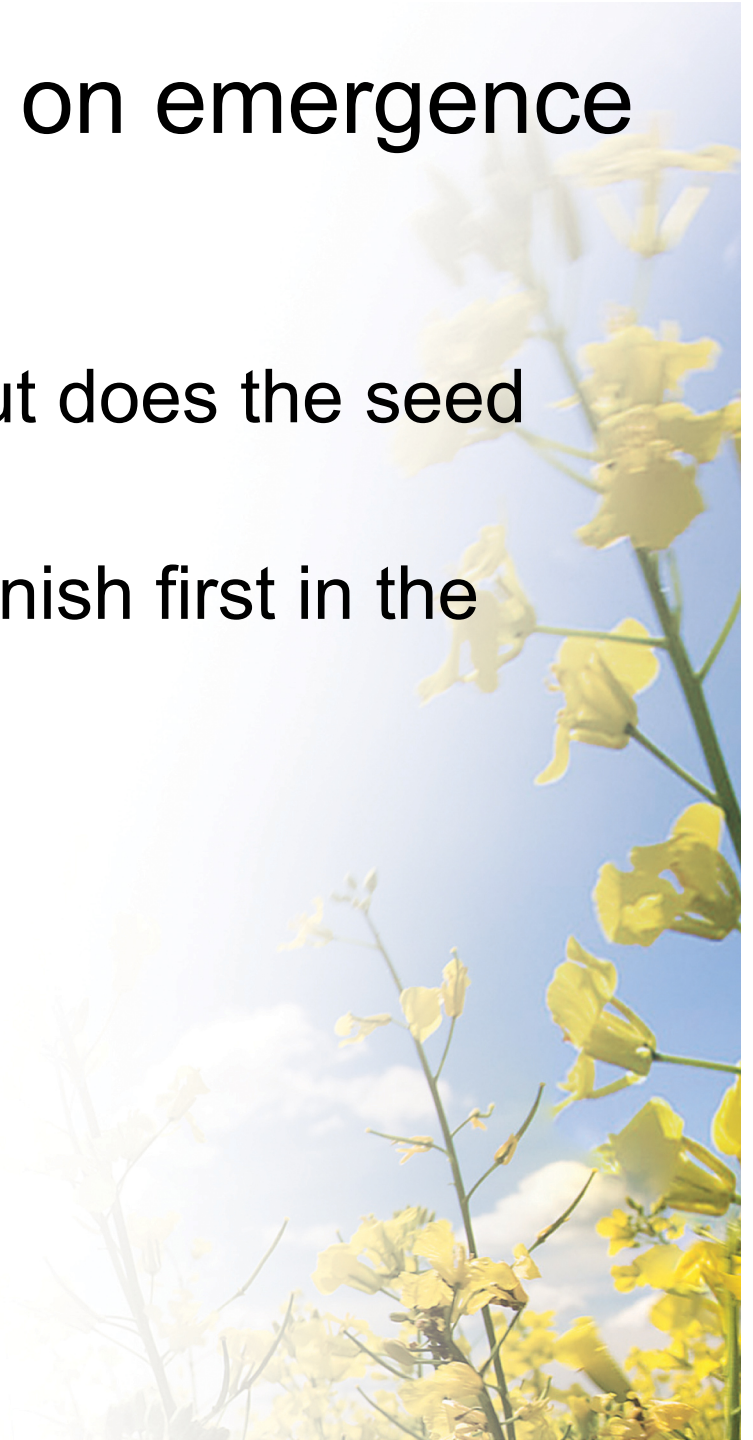
# Effect soil type and seeding depth on *B. napus* emergence

Soil type	6 days		13 days	
	1.5 cm (1/2")	3.0 cm (1")	1.5 cm	3.0 cm
Loam/Sandy Clay	34%	11%	90%	59%
Clay loam/ Sandy Clay	15%	16%	90%	65%
Grey Wooded/ Clay	0%	0%	65%	35%
Sand/Sandy Loam	13%	1%	71%	36%

# Effect of seeding speed on emergence

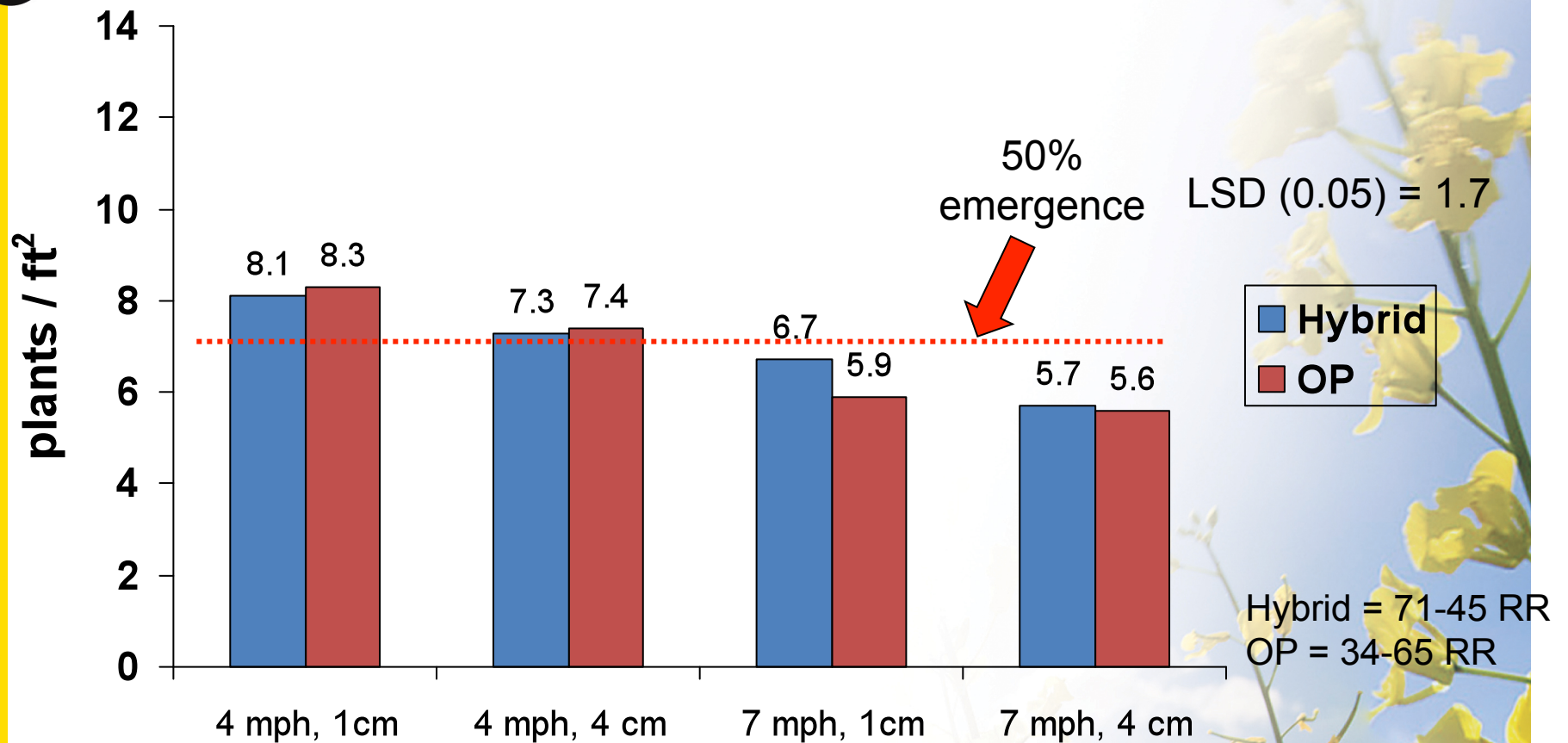


- You may be finished first but does the seed yield come with it?
- Or does slowing help you finish first in the bin?





# Effect of seeding speed on emergence



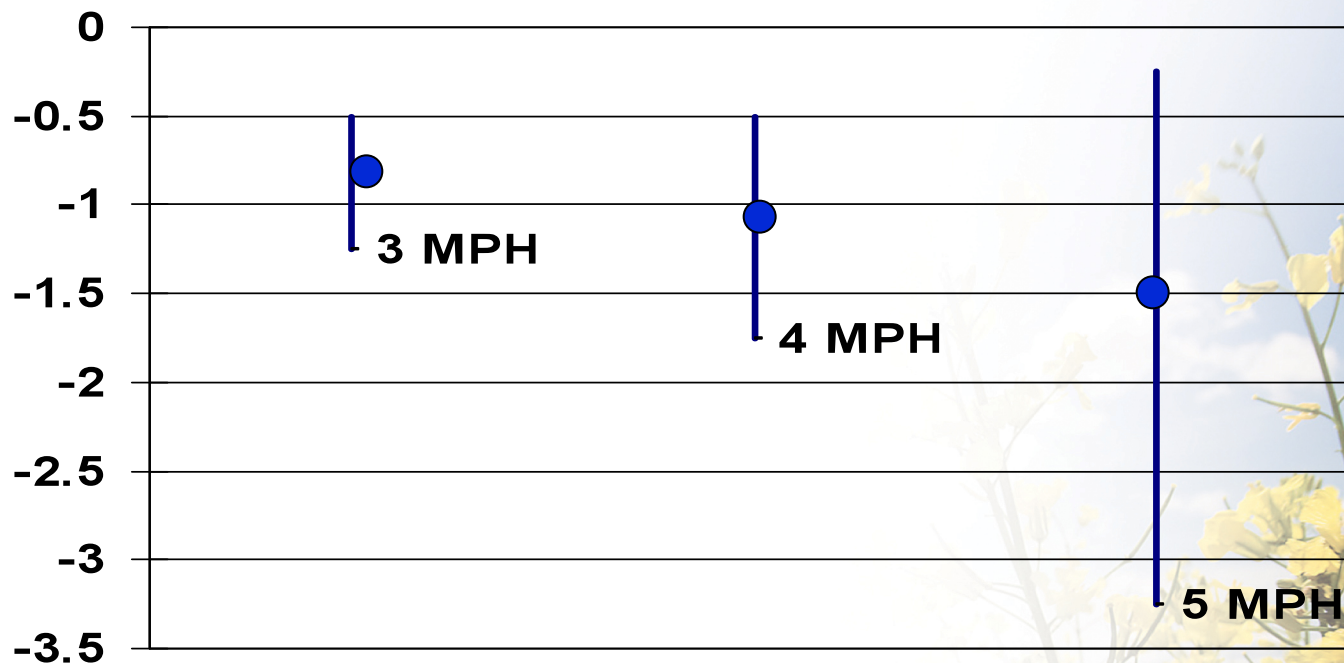
Seeding Rate: 14 seeds/ft²

AAFC Lacombe - 2007

# Effect of seeding speed on emergence



<u>Seeding Speed</u>	<u>Avg. Depth</u>	<u>Range of Depth</u>
3 MPH	$\frac{3}{4}$ "	0.5-1.25"
4 MPH	1"	0.5-1.75"
5 MPH	1.5"	0.25-3.25"





# Effect of seeding speed on emergence



© Canola Council of Canada

**Stubble disturbance @ 5.3 mph**



**Same Speed 4.4 mph**





A photograph of a canola field. The plants are green and densely packed in rows. There is a lot of straw residue visible between the rows of plants, suggesting a no-till or reduced-till farming practice. The text "4.4 MPH" is overlaid in the upper center of the image.

**4.4 MPH**



**4.0 MPH**



**Buried rows**



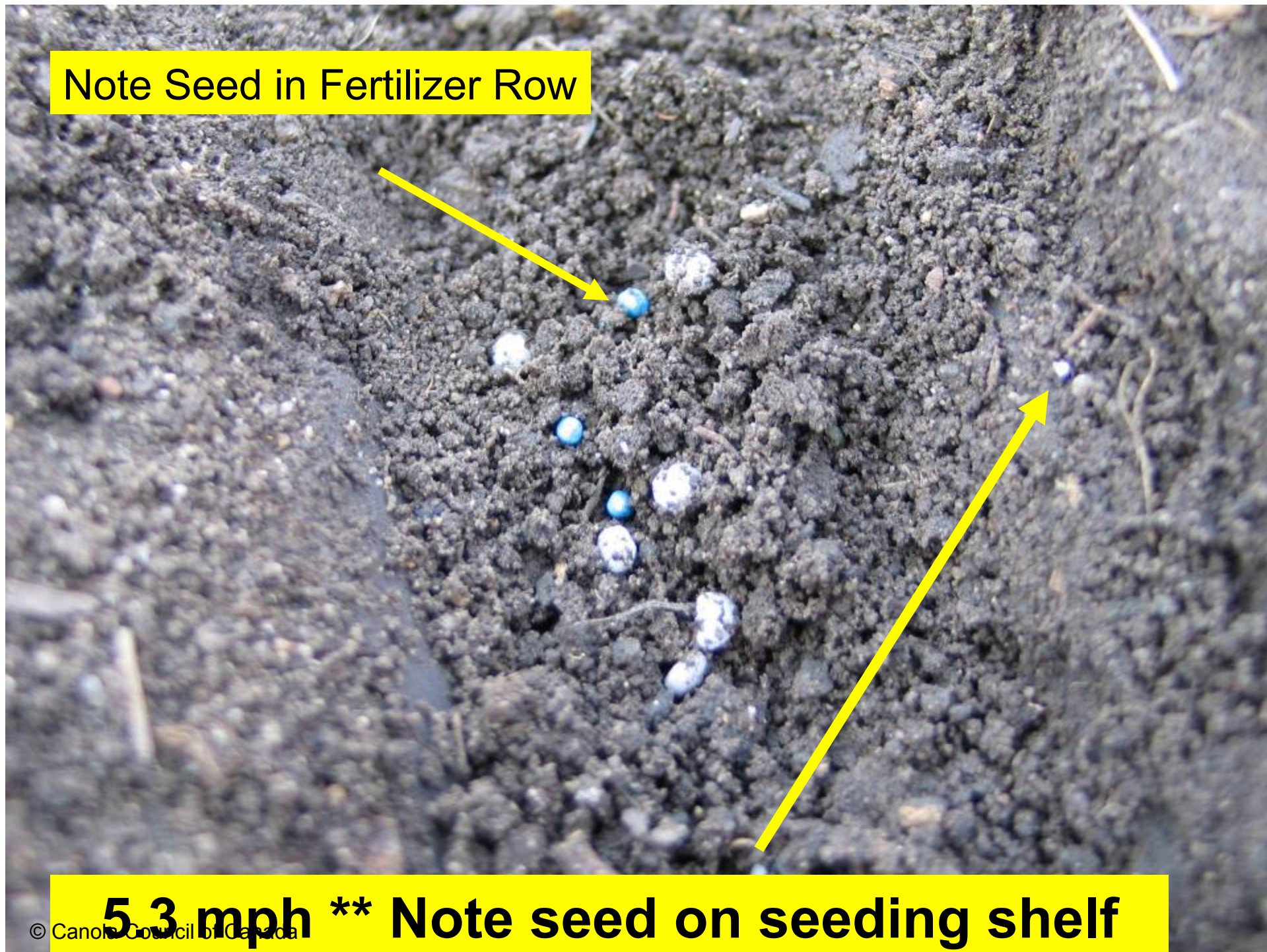


# Effect of seeding speed and openers on emergence

**Uneven Stand**



Note Seed in Fertilizer Row



**5.3 mph \*\* Note seed on seeding shelf**

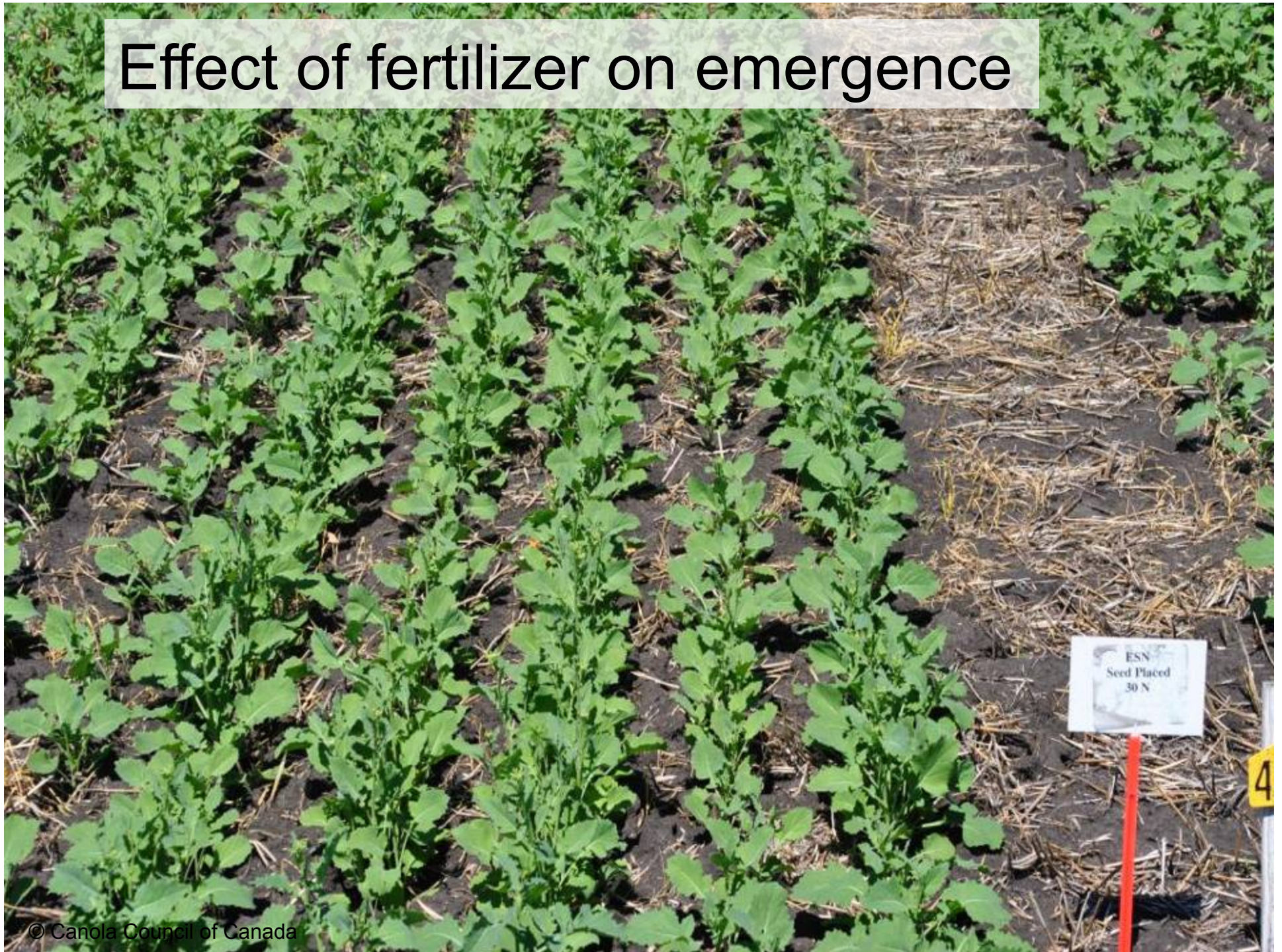


# Effect of fertilizer on emergence





# Effect of fertilizer on emergence





# Effect of herbicide residue on emergence



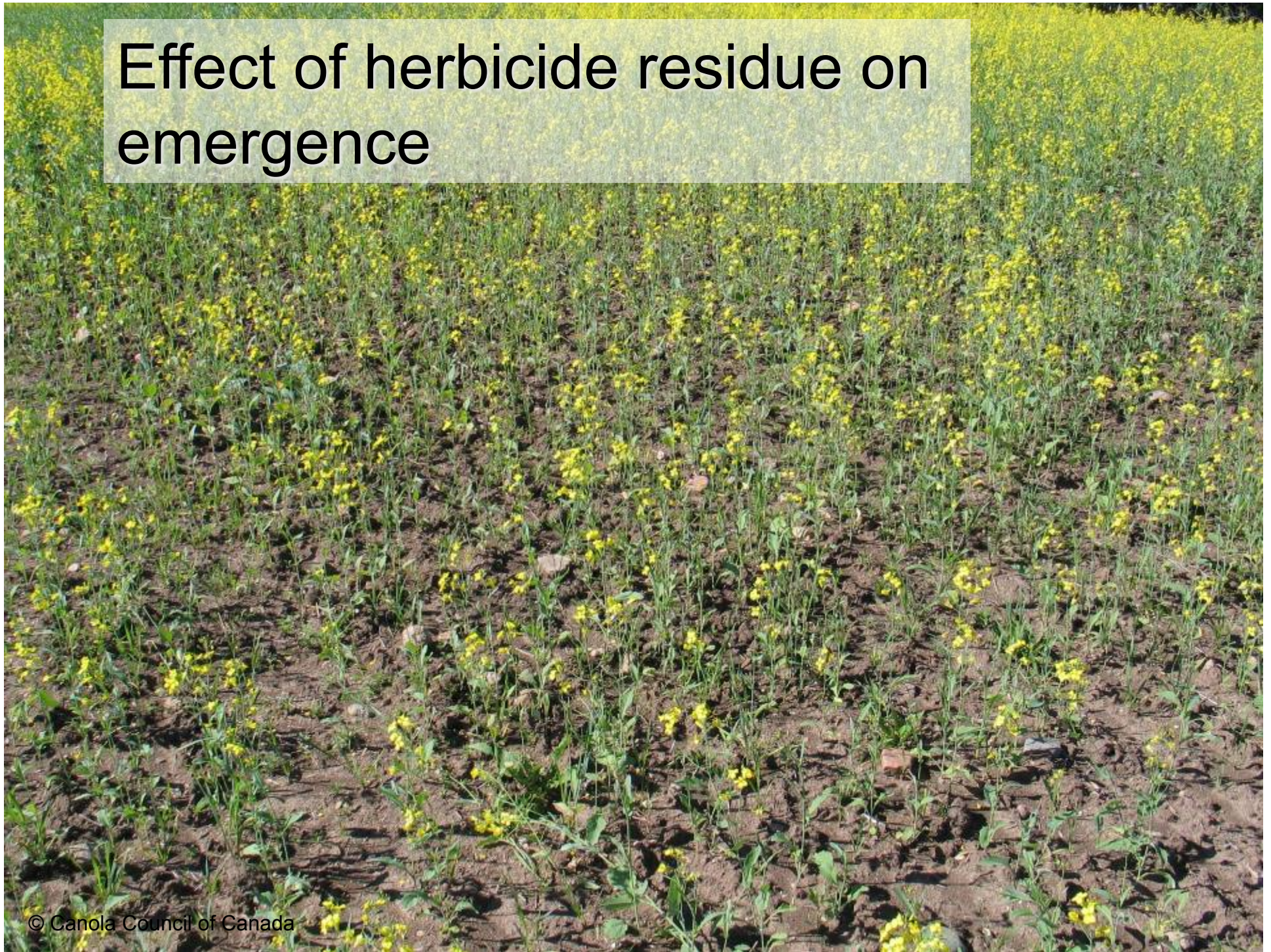


# Effect of herbicide residue on emergence





# Effect of herbicide residue on emergence





# Effect of seed quality on emergence









# Effect of seed quality on emergence

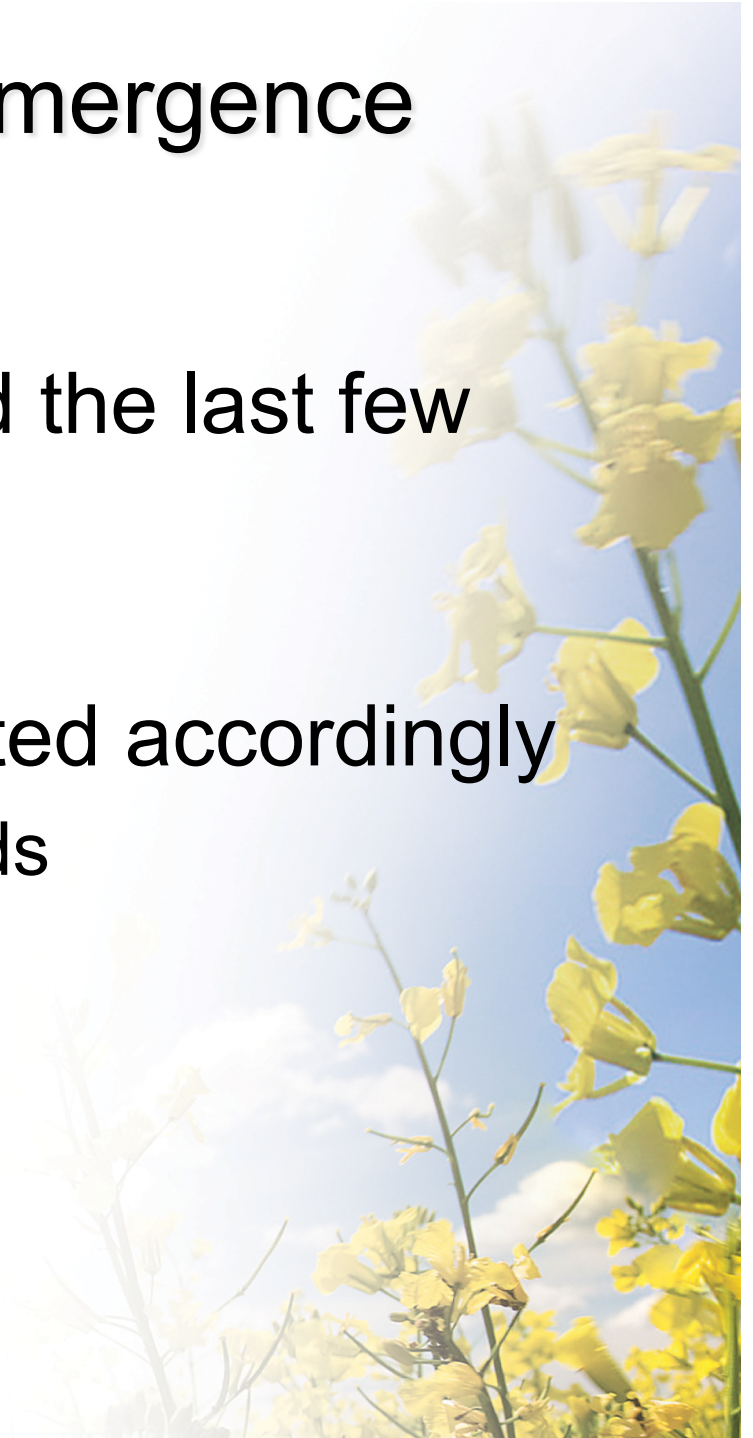
**Fan speed too high**



# Effect of seed size on emergence



- Seed size has increased the last few years
  - Due to hybrid adoption
- Seeding rates not adjusted accordingly
  - Leading to reduced stands





Seed Survival (%) = 40%

Thousand Seed Weight (grams)	Seeding Rates (lb/ac)					
	3	4	5	6	7	8
2.5	5.0	6.7	8.3	10.0	11.7	13.3
3	4.2	5.6	6.9	8.3	9.7	11.1
3.5	3.6	4.8	6.0	7.1	8.3	9.5
4	3.1	4.2	5.2	6.3	7.3	8.3
4.5	2.8	3.7	4.6	5.6	6.5	7.4
5	2.5	3.3	4.2	5.0	5.8	6.7
5.5	2.3	3.0	3.8	4.5	5.3	6.1
6	2.1	2.8	3.5	4.2	4.9	5.6

Seed Survival (%) = 70%

Thousand Seed Weight (grams)	Seeding Rates (lb/ac)					
	3	4	5	6	7	8
2.5	8.8	11.7	14.6	17.5	20.4	23.3
3	7.3	9.7	12.2	14.6	17.0	19.5
3.5	6.3	8.3	10.4	12.5	14.6	16.7
4	5.5	7.3	9.1	10.9	12.8	14.6
4.5	4.9	6.5	8.1	9.7	11.3	13.0
5	4.4	5.8	7.3	8.8	10.2	11.7
5.5	4.0	5.3	6.6	8.0	9.3	10.6
6	3.6	4.9	6.1	7.3	8.5	9.7



# Effect of seed size on emergence







# **Seed Carry Over 2010-2011**





# **Treated Seed Carryover** **(Seed on your farm)**

**Need to ensure to store seed**

- In a cool dry place away from heat and rodents**
- Away from chemicals such as MCPA, or 2,4-D**
- Prior to seeding, sample bags and send to a accredited seed lab to obtain a proper germination test**
- Seed the bags separately from new seed**
- Keep a sample from both the carry over seed as well as new seed and store properly**

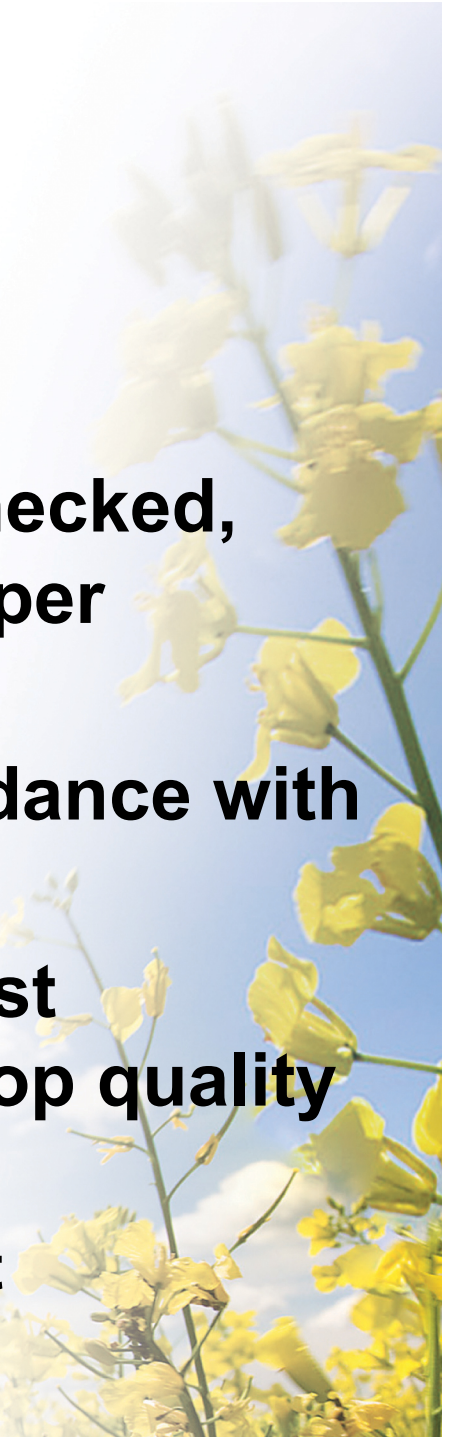




# **Treated Seed Carryover**

## **(Seed coming from retail)**

- **Returned 2010 seed has been checked, retested and being stored in proper warehouse facilities**
- **All tests are conducted in accordance with CFIA/Seeds Act rules**
- **Seed Co's state they do every test possible to ensure you receive top quality seed next spring**
  - **All Co's use the standard germ test**
  - **Vigour tests vary between Co's**

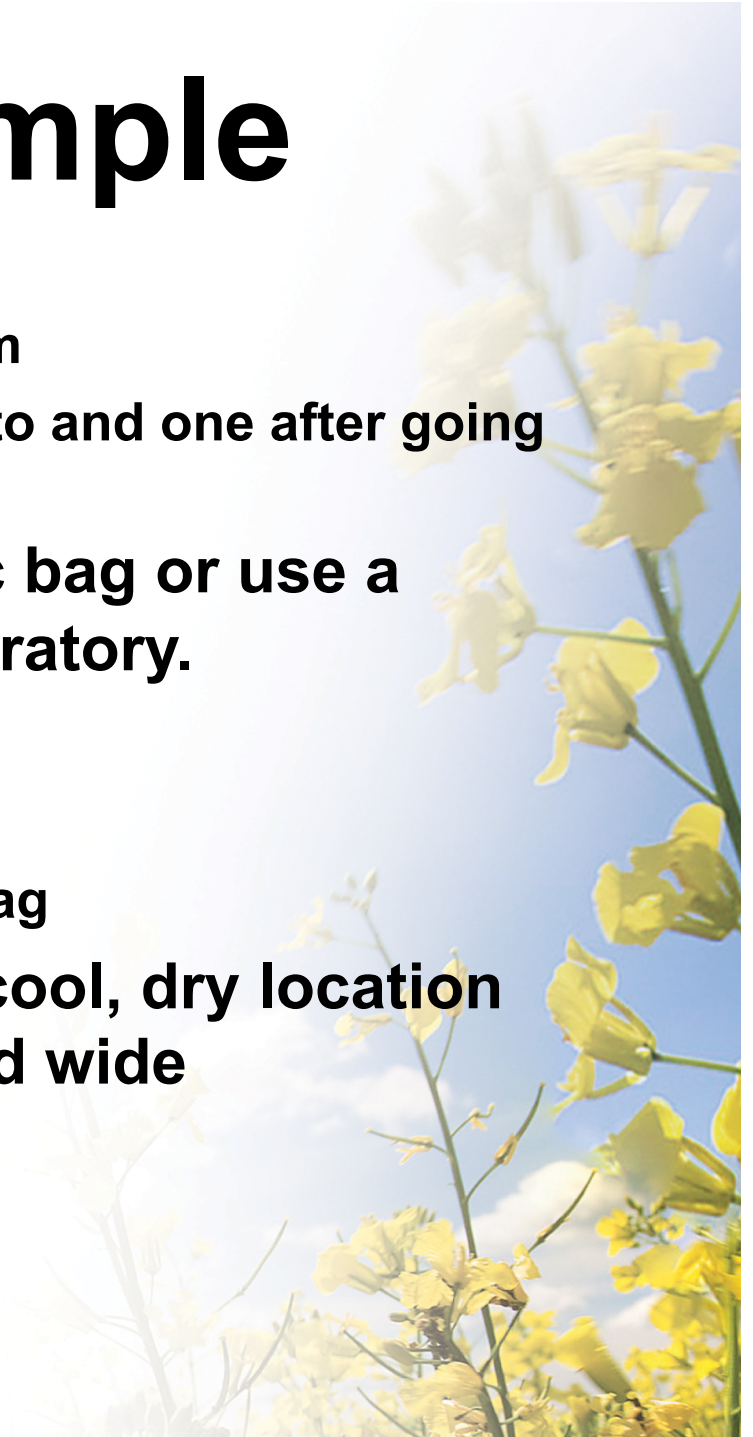




# Keep a Sample



- **Min 500g (2 cups) sample**
  - of ALL crops sown on your farm
  - Or 2 samples = one bag prior to and one after going through drill
- **Store the samples in a Ziploc bag or use a sample bag from a seed laboratory.**
- **Label the samples**
  - with info of seed lot
  - or enclose blue certified seed tag
- **Rodent proof container in a cool, dry location away from direct sunlight and wide temperature fluctuations."**





# Our Campaign

Seed SMART with these tips from the Canola Council of Canada

## SEED smart



Yield losses can be avoided right from the start when you seed your canola. Follow these handy SEED SMART tips to help optimize emergence and ensure a more uniform stand to make the most of your canola seed investment.

- S**low down
- M**easure depth
- A**im for uniform stand
- R**emember to take a sample
- T**arget 10 plants/ft<sup>2</sup>



### Slow down

Slowing down while seeding allows for accurate seed placement and proper separation of seed and fertilizer. Consider fan speed as well – higher application rates and/or seeding speeds often require higher fan speeds to avoid plugging but this can increase seed damage and seed bounce. Make sure to adjust dampers and fans on the seed distribution part of your seeding system as recommended in order to minimize this damage.

### Measure depth

Prior to seeding, level your drill from side to side and front to back. Once in the field, measure seed depth across the drill runs at least 100 feet behind the spot you stopped to ensure measurement of seed depth at your actual seeding speed. Check depth regularly in a field and as you move from one field to the next.



### Aim for a uniform stand

A non-uniform stand, as pictured on the left, can result in a 20% yield loss as compared to a uniform stand, even in a normal growing season. A uniform stand results in more even crop staging, making pesticide applications and swathing timing easier to stage.

### Remember to take a sample

Keep a sample in a paper or cloth bag from each variety and seed lot that you seed. Record relevant information, keep the seed bag blue tag with the sample, and store all samples in a cool, dry place.

### Target 10 plants/ft<sup>2</sup>

Select your seeding rate using the following formula, which accounts for differences in Thousand Seed Weight (TSW) of different seed lots.

**Seeding Rate (lb/ac)** =  $(9.6 \times \text{Desired Plants per ft}^2 \times \text{TSW}) / \text{Estimated Seed Survival}$

Soil temperature should be at a minimum of 5°C before starting to seed canola. After emergence, take time to assess the stand so you can implement appropriate management techniques to protect the stand that is there.



For more tips on canola seeding, visit [www.canolacouncil.org](http://www.canolacouncil.org).





Uniform Stand: Seeding Speed 4.2 MPH  
Uniform stands set you up for success at the bins

Higher Yield. Guaranteed.